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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
CHOW, CHARLES CHIANG

ART UNIT	PAPER NUMBER
2618	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/25/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/811,579	YANG ET AL.	
	Examiner	Art Unit	
	Charles Chow	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *28-40* is/are allowed.

6)☒ Claim(s) *1-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *3/29/2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Detailed Action

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-3, 8-10, 18-20, 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khlat et al. (US 6,678,340 B1) in view of Khlat et al. (US 2004/0071,238 A1) and Yan et al. (US 2003/0148,750 A1).

For claim 1, Khlat et al. [Khlat-'340] teaches a method for down converting a Radio Frequency RF information signal to a base band information signal [front end 10 receives rf signal via antenna 12; 20 converts received rf signal to VLIF signal, col. 5, lines 4-67, Fig. 1 & its description in specification; 40 converts VLIF signal to base band, col. 6, lines 1-13], the method comprising

receiving the RF information signal [col. 5, lines 4-10];

down converting the RF information signal to produce a Very Low Intermediate Frequency (VLIF) information signal at a VLIF [mixer 20, 24 converts rf signal to VLIF signal, col. 5, lines 39-67 & col. 6, line 58 to col. 7, line 2, Fig. 1/Fig. 2; to remove DC & 1/f noise, col. 7, lines 3-15],

down converting the VLIF information signal to produce a base band information signal [40 down converts the VLIF to base band signal, Fig. 1, col. 6, lines 1-17].

Khlat-'340 fails to teach the DC offset at IF, the band pass filtering the VLIF information signal; the producing DC offset indication, & correcting the DC offset by subtracting DC offset from the VLIF information signal.

Khlat-'238 teaches the down converted IF signal having a DC offset [the down converted signal at input of amplifier 56 has DC offset, which can be quickly corrected via loop to DAC 64, paragraph 0019, Fig. 2 & VLIF in paragraph 0001, 0009, 0019];

band pass filtering the VLIF information signal [the band pass in sigma-delta bit quantizing 60 providing band pass filtering function, paragraph 0017], in order to reduce the DC offset , to provide better demodulated signal [abstract]. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to improve Khlat-'340B1 with Khlat-238A1, in order to reduce the unwanted DC offset, to provide better demodulated signal.

Khlat-'340 & Khlat-'238 fail to teach the producing a DC offset indication for the VLIF; the generating DC offset correction based upon the DC offset indication, the DC offset correction having a DC offset correction component; the subtracting the DC offset correction from VLIF information to substantially remove a DC offset from the post-filtered VLIF information signal.

Yan et al. [Yan] teaches the producing a DC offset indication for the VLIF information signal [the 56 monitors I, Q signals to determines DC offset levels, paragraph 0021 & Fig. 1];

generating a DC offset correction based upon the DC offset indication [the determines the relative DC levels for differential in-phase & quadrature-phase to provide level adjustment, paragraph 0021], the DC offset correction having a DC offset correction component [providing corresponding level adjustment output, paragraph 0021]; and

subtracting the DC offset correction from the VLIF information signal to substantially remove a DC offset from the post-filtered VLIF information signal [54A-54D to remove the DC offset from VLIF signal output from down converter 42, paragraph 0018; of the post-

filtered VLIF by 50A-50D, Fig. 1 & paragraph 0021], in order to remove the DC offset before signal being processed by the base band processor 30 [paragraph 008]. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to improve Khlat-'340, Khlat-238 with Yan's DC offset correction, in order to remove the DC offset before signal being processed by the base band processor.

{ Note: A> **Brown (US 2004/0146,120 A1)** in below also teaches the VLIF, the near zero intermediate frequency, but not zero intermediate frequency in paragraph 0017; the average detector 441 to average N samples for the entire packet from beginning to end, to remove the DC offset by 461, paragraph 0023; received packet in Fig. 3 & 0015.

B> **Rahman (US 7,130,359 B2)** also teaches the VLIF signal at the output of first down converter, mixer 54, 62, having the DC offset correction 70 in col. 3, lines 16-48, Fig. 2; the second down converter, mixer 104, col. 4, lines 36-56] }.

For claims 2, 19, Khlat-'340 teaches the method [Fig. 1 & its description in specification] & wherein the VLIF is approximately 100 kHz [Fig. 2b & col. 5, line 39-67; col. 6, line 58 to col. 7, line 2].

For claims 3, 20, Khlat-'340 teaches the method [Fig. 1 & its description in specification] , but fails to teach the DC offset of the VLIF.

Yan teaches the wherein the DC offset of the VLIF information signal is introduced by the at least one of amplification operations, filtering operations, and down conversion operations [the local oscillator energy leakage & mixed with itself, created the DC offset, paragraph 0005], using the same reasoning in claim 1 above to combine Yan to Khlat-340 & Khlat-238.

For claims 8, 25-26, Khlat-'340 teaches the method [Fig. 1 & its description in specification], & further comprising converting the VLIF information signal from an analog signal to a digital signal [the A/D converter 30 in Fig. 1, col. 5, line 38].

For claims 9, 27, Khlat-'340 teaches the method [Fig. 1 & its description in specification], and down converting the VLIF information signal are performed using digital processing operations [the 40 converts VLIF, Fig. 1, col. 6, lines 1-17], but fails to teach the band pass filtering; the producing DC offset indication; generating the DC offset correction, subtracting the DC offset correction.

Khlat -'238 teaches the wherein band pass filtering the VLIF information signal [the band pass filter in 60 for the VLIF receiver [paragraph 0001, 0009, 0019], using the same reasoning in claim 1 above to combine Khlat-'238 to Khlat-'340.

Khlat-'340 & Khlat'238 fail to teach wherein band pass filtering the VLIF information signal,

Yan teaches the wherein band pass filtering the VLIF information signal [Fig. 1, paragraph 0021], using the same reasoning in claim 1 above to combine Yan to Khlat-'238 to Khlat-'340.

For claim 10, Khlat-'340 teaches the method [Fig. 1 & its description in specification] & the wherein down converting the RF information signal is performed in an analog operation [the analog operation of down conversion performed by 20, before A/D 30 & col. 5, line 19-46].

For claim 18, Khlat-'340 teaches a wireless receiver for down converting a Radio Frequency RF information signal to a base band information signal [10 receives rf signal & 20 converts to VLIF, col. 5, lines 4-46, Fig. 1 & its description in specification; 40 converts VLIF to base band in col. 6, lines 1-13], the wireless receiver comprising

a local oscillator operable to produce a local oscillation [RFLO 28, Fig. 1],

a mixer [22, 24] operable to mix the RF information signal [signal from antenna 12] with the local oscillation [28] to down convert the RF information signal to produce a Very Low intermediate Frequency (VLIF) information signal at a VLIF [mixer 20, 24 converts rf to VLIF, col. 5, lines 39-67 & col. 6, line 58-col. 7, line 2, Fig. 1/Fig. 2; to remove DC & i/f, noise [col. 7, lines 3-15],

a down converter operable to down convert the VLIF information signal to a baseband information signal [40 down converts the digital VLIF to base band0, Fig. 1, col. 6, lines 1-17].

Khlat-'340 fails to teach the DC offset at IF, the band pass filtering the IF information signal; the producing DC offset indication, & correcting the DC offset by subtracting DC offset from the VLIF information signal.

Khlat-'238 teaches the down converted IF signal having a DC offset [the down converted signal at input of amplifier 56 has DC offset, which can be quickly corrected via loop to DAC 64, paragraph 0019, Fig. 2 & VLIF in paragraph 0001, 0009, 0019];

a band pass filter operable to band pass filter the VLIF information signal [the bandpass in sigma-delta bit quantizing 60 providing band pass filtering function, paragraph 0017], in order to reduce the DC offset, to provide better demodulated signal [abstract]. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to improve Khlat-'340B1 with Khlat-238A1, in order to reduce the unwanted DC offset, to provide better demodulated signal.

Khlat-'340 & Khlat-'238 fail to teach a DC offset determination module operable to generate a DC offset indication for the VLIF; the generating DC offset based upon the DC

offset indication; a subtraction module operable to subtract the DC offset correction from VLIF to substantially remove a DC offset of the post-filtered VLIF information signal.

Yan et al. [Yan] teaches a DC offset determination module operable to produce a DC offset indication for the VLIF information signal [the 56 monitors I, Q signals to determines DC offset levels, paragraph 0021 & Fig. 1];

a DC offset correction module operable to generate a DC offset correction based upon the DC offset indication [the determines the relative DC levels for differential in-phase & quadrature-phase to provide level adjustment, paragraph 0021], the DC offset correction having a DC offset correction component [providing corresponding level adjustment output, paragraph 0021]; and

a subtraction module operable to subtract the DC offset correction from the VLIF information signal to substantially remove a DC offset of the post-filtered VLIF information signal [54A-54D to remove the DC offset from VLIF signal output from down converter 42, paragraph 0018; of the post-filtered VLIF by 50A-50D, Fig. 1 & paragraph 0021], in order to remove the DC offset before signal being processed by the base band processor 30 [paragraph 008]. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to improve Khlat-'340, Khlat-238 with Yan's DC offset correction, in order to remove the DC offset before signal being processed by the base band processor.

2. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khlat-'340 in view of Khlat-'238 and Riordan et al. (US 6,240, 100B1).

For clam 11, Khlat -'340] teaches a method for down converting a Radio Frequency RF information signal to a base band information signal [10 receives rf signal & 20 converts to

VLIF, col. 5, lines 4-46, Fig. 1; 40 converts VLIF to base band in col. 6, lines 1-13], the method comprising

receiving the RF information signal [col. 5, lines 4-10];

in an analog operation, down converting the RF information signal to produce a Very Low Intermediate Frequency (VLIF) information signal at a VLIF [mixer 20, 24 converts rf to VLIF, col. 5, lines 39-67 & col. 6, line 58-col. 7, line 2, Fig. 1/Fig. 2; to remove DC & i/f, noise [col. 7, lines 3-15],

converting the VLIF information signal from an analog signal to a digital signal [the A/D converter 30 in Fig. 1, col. 5, line 38].

in a digital operation, down converting the VLIF information signal to produce a base band information signal [the down converting the VLIF by the digital conversion 40, Fig. 1, col. 6, lines 1-17].

Khlat-'340 fails to teach the DC offset at IF, the band pass filtering the VLIF information signal; the producing DC offset indication, & correcting the DC offset by subtracting DC offset from the VLIF information signal.

Khlat-'238 teaches the down converted IF signal having a DC offset [the down converted signal at input of amplifier 56 has DC offset, which can be quickly corrected via loop to DAC 64, paragraph 0019, Fig. 2 & VLIF in paragraph 0001, 0009, 0019];

in a digital operation, band pass filtering the VLIF information signal [the band pass located in the digital block, sigma-delta bit quantizing 60, to provide the band pass filtering function, paragraph 0017],

the post-filtered IF information signal of the DVLIF [the post-filtering of IF signal, from mixer 20, from mixer 20, , Fig. 2; VLIF in paragraph 0001, 0009, 0019], in order to reduce the DC offset , to provide better demodulated signal [abstract]. Therefore, It would have

been obvious to one of ordinary skill in the art at the time the invention was made to improve Khlat-'340B1 with Khlat-238A1, in order to reduce the unwanted DC offset, to provide better demodulated signal.

Khlat-'340 & Khlat-'238 fail to teach the in a digital operation, producing a DC offset indication for the IF information signal; in a digital operation, generating a DC offset correction based upon the DC offset indication, the DC offset correction having a DC offset correction component; in a digital operation, subtracting the DC offset correction from the IF information signal to substantially remove a DC offset from the post-filtered IF information signal.

Riordan et al. [Riordan] teaches the in a digital operation, producing a DC offset indication for the IF information signal [after A/D 46, 46/48, Fig. 3, the offset prediction 18 retrieved settings from AGC controller 72, col. 6, lines 1-4],

in a digital operation, generating a DC offset correction based upon the DC offset indication, the DC offset correction having a DC offset correction component [the predictive DC offset correction 18 determines correction value 74, 78, Fig. 3 & col. 6, lines 4-9 & col. 6, lines 25-30];

in a digital operation, subtracting the DC offset correction from the IF information signal to substantially remove a DC offset from the post-filtered IF information signal [54, 56 subtracts DC offset correcting values 86, 88, to produce corrected base band signal, Fig. 3 & col. 6, lines 30-53], in order to substantially remove the undesired DC offset component [col. 3, lines 7-12]. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to improve Khlat-'340, Khlat-238 with Riordan's digitally removing the DC offset from IF signal, in order to substantially remove the undesired DC offset component.

For claim 12, Khlat-'340 teaches the method [Fig. 1 & its description in specification] & wherein the VLIF is approximately 100 kHz [Fig. 2b & col. 5, line 39-67; col. 6, line 58 to col. 7, line 2].

For claim 13, Khlat-'340 teaches the method of VLIF [Fig. 1 & its description in specification, col. 5, lines 39-67] , but fails to teach the DC offset of the IF.

Riordan teaches the wherein the DC offset of the IF information signal is introduced by the down conversion operations [col. 1, lines 25-30], using the same reasoning in claim 11 above to combine Riordan to Khlat-340 & Khlat-238.

3. Claims 4, 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khlat-'340 in view of Khlat-'238, Yan, as applied to claims 1, 11, 18, and further in view of Brown (US 2004/0146,120 A1).

For claims 4, 21, Khlat teaches the method [Fig. 1 & its description in specification]. Khlat-'340 &'238, Yan fail to teach the wherein the DC offset indication is produced by averaging the DC offset of the VLIF information signal across a full RF burst.

Brown teaches the wherein the DC offset indication is produced by averaging the DC offset of the VLIF information signal across a full RF burst [the average detector 441 to average N samples for the entire packet from beginning to end, as across a full RF burst, to remove the DC offset by 461, paragraph 0023; received packet in Fig. 3 & 0015; the near zero intermediate frequency in paragraph 0017], to reliably, accurately, remove the DC offset, by averaging & digital calculation. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Khlat-'340 &'238, Yan with Brown's removing DC offset by averaging & digital calculation, to reliably, accurately, remove the DC offset.

4. Claims 5-6, 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khlat-'340 in view of Khlat-'238, Yan, Brown, as applied to claims 4, 18, and further in view of Stenstrom et al. (US 6,711,393 B1).

For claims 5-6, 22-23, Khlat-'340, Khlat-'238, Yan, Brown teaches the method in claim 4, but fail to teach the wherein the full RF burst carries a portion of one of a GPRS data packet or an EDGE data packet, and the full rf burst is digitally modulated according to an 8-psk constellation.

Stenstrom et al. [Stenstrom] teaches the wherein the full RF burst carries a portion of an EDGE data packet and the full rf bust is digitally modulated according to an 8-psk constellation [transmitted modulated signal of EDGE data having 8-psk & the subtracting of the DC offset in col. 4,lines 4-35; the averaging of part of the burst in col. 2, line 63 to col. 3, line 10, abstract], in order to remove the DC offset based on the received EDGE data. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Khlat-'340 &'238, Yan, Brown with Stenstrom's removing the DC offset, in order to remove the DC offset based on the received EDGE data.

5. Claims 7, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khlat-'340 in view of Khlat-'238, Yan, Brown as applied to claims 1, 18, and further in view of Riordan.

For claims 7, 24, Khlat-'340, Khlat-'238, Yan, Brown teaches the method in claim 4, but fail to teach the wherein the full RF burst is digitally modulated according to a GMSK constellation.

Riordan teaches the wherein the full RF burst is digitally modulated according to a GMSK constellation [the averaging of the GMSK frames which is digitally modulated, in order to estimate DC offset & remove the DC offset in col. 6, lines 10-24 & averaging

consecutive 8 bursts in col. 8, line 66 to col. 9, line 13], in order to reliable remove the DC offset in GMSK data. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Khlat-'340, Khlat-'238, Yan, Brown with Riordan's averaging 8 GMSK bursts, in order to reliable remove the DC offset in GMSK data.

6. Claims 14, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khlat-'340 in view of Khlat-'238, Riordan, as applied to claim 11 above, and further in view of Brown.

For claim 14, Khlat-'340, Khlat-'238, Riordan teach the method in claim 11, but fail to teach the wherein the DC offset indication is produced by averaging the DC offset of the VLIF information signal across a full RF burst.

Brown teaches the wherein the DC offset indication is produced by averaging the DC offset of the VLIF information signal across a full RF burst [the average detector 441 to average N samples for the entire packet from beginning to end, as across a full RF burst, to remove the DC offset by 461, paragraph 0023; received packet in Fig. 3 & 0015; the near zero intermediate frequency in paragraph 0017], to reliably, accurately, remove the DC offset, by averaging & digital calculation. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Khlat-'340 &'238, Riordan with Brown's removing DC offset by averaging & digital calculation, to reliably, accurately, remove the DC offset.

For claim 17, Khlat-'340, Khlat-'238, Riordan, Brown teach the method in claim 14, but fail to further teaches the wherein the full RF burst is digitally modulated according to a GMSK constellation.

Riordan teaches the wherein the full RF burst is digitally modulated according to a GMSK constellation [the averaging of the GMSK frames which is digitally modulated, in order to estimate DC offset & remove the DC offset in col. 6, lines 10-24 & averaging consecutive 8 bursts in col. 8, line 66 to col. 9, line 13], using the same reasoning in claim 11 above to combine Riordan to Khlat-'340 &'238 & Brown.

7. Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khlat-'340 in view of Khlat-'238, Riordan, Brown as applied to claim 14 above, and further in view of Stenstrom.

For claims 15-16, Khlat-'340, Khlat-'238, Riordan, Brown teaches the method in claim 14, but fail to teach the wherein the full RF burst carries a portion of one of a GPRS data packet or an EDGE data packet, and the full rf burst is digitally modulated according to an 8-psk constellation.

Stenstrom et al. [Stenstrom] teaches the wherein the full RF burst carries a portion of an EDGE data packet and modulated according to an 8-psk constellation [transmitted modulated signal of EDGE data having 8-psk & the subtracting of the DC offset in col. 4,lines 4-35; the averaging of part of the burst in col. 2, line 63 to col. 3, line 10, abstract], in order to remove the DC offset based on the received EDGE data. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to upgrade Khlat-'340 &'238, Riordan, Brown with Stenstrom's removing the DC offset, in order to remove the DC offset based on the received EDGE data.

Allowable Subject Matter

8. The following is an examiner's statement of reasons for allowance:

Claims 28-31, 32-37, 38-40 are allowable over the prior art of record. The prior arts fail to teach the allowable features, singly, particularly, or in combination.

The prior arts in below fail to teach the method step in independent **claim 28**, for the down converting the VLIF information signal to produce a base band information signal having a DC offset component at -VLIF frequency (the negative VLIF frequency) [912/914 before LPF 916, Fig. 9], together with the other features in claim 28 for the VLIF associated with the DC offset correction.

The prior arts in below fail to teach the method step in independent **claim 32**, for the in an analog operation, down converting the VLIF informaiton isgnal to produce a base band information signal having a DC offset component at -VLIF [mixers 912, 914, before LPF 916, Fig. 9], together with the other features in claim 28 for the VLIF associated with the DC offset correction.

The prior arts in below fail to teach the method step in independent **claim 38**, for a second mixer operable to mix the rf information signal with the second local oscillation to down convert the VLIF information signal to produce a base band information signal having a DC offset component at -VLIF [mixers, 912, 914 before LPF 916, Fig. 9], together with the other features in claim 28 for the VLIF associated with the DC offset correction.

The dependent **claims 29-31, 33-37, 39-40** are also allowable due to their dependency upon the allowable independent claims above and the having additional claimed features.

The closest prior arts **Hietala et al. (US 6,597,748 B1)** teaches the down conversion of rf signal to VLIF by converter 20, then, via modulator 35, to digital mixer 51 [abstract, Fig. 1].

Other prior arts in below has been considered, but they fail to teach the above allowable features.

Rahman (US 7,130,359 B2), Iemura (US 6,442,383B2), Khlat et al. (US 2004/0071,238 A1), Khlat et al. (US 6,678,340 B1), Yan et al. (US 2003/0148,750 A1), Brown (US 2004/0146,120 A1), Stenstrom et al. (US 6,711,393 B1), Riordan et al. (US 6,240,100 B1), Minnis et al. (US 6,954,628 B2), Khlat (US 6,075,409), Rahman et al. (US 2002/0151,289 A1), Rahman et al. (Us 2006/0222,117A1), Li et al. (US 7,076,225 B2), Severson et al. (US 2003/0100,286 A1), Shi et al. (US 7,136,431 B2).

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

A. **Rahman (US 7,130,359 B2)** also teaches the VLIF signal at the output of first down converter, mixer 54, 62, having the DC offset correction 70 in col. 3,lines 16-48, Fig. 2, & the second down converter, mixer 104 [col. 4, lines 36-56].

B. **Khlat (US 6,075,409)** teaches the ZIF receiver, having mixer 30 A/D 130, the DC offset correction 200, 210, 200 [Fig. 1 & its description in specification].

C. **Severson et al. (US 2003/0100,286 A1)** teaches the DE offset cancellation 150, after the digitizing at 134, having ZIF receiver 120 & demodulator 190 [Fig. 1 & its description in specification].

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Chow whose telephone number is (571) 272-7889. The examiner can normally be reached on 8:00am-5:30pm. If attempts to reach the examiner by

telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Charles Chow CC

January 8, 2007.